

REMARKS/ARGUMENTS

Status of Claims

Claims 1 to 46 are currently pending in the application.

Amendments to Claims

Claims 47 to 80 have been cancelled.

Claim 6 has been amended by replacing the term “circuit second” with “second circuit”.

Claim Objections

The Examiner has objected to claims 2 to 4, 6, 8, 12, 13 and 44 because of the formalities described on page 2 of the Office Action.

The Examiner alleges that it is unclear if the “access network nodes” recited in claim 2 are the same “network access nodes” that are part of the multi-hop wireless network recited in claim 1. Applicant submits that there should be no confusion as claim 2 recites “in combination with an access network comprising a plurality of access network nodes for which the multi-hop wireless backhaul network is providing backhaul functionality” (emphasis added), which defines that the access network nodes are part of the access network and it is the access network that the wireless backhaul network is providing backhaul functionality.

Claims 3, 4, 8, 12, 13, and 44 are dependent upon claim 2 and are objected to based on their dependence on claim 2.

Applicant respectfully requests that the Examiner reconsider and withdraw the objection.

With regard to claim 6, the claim has been amended as described above to address the Examiner’s objection that the claim contains a typographical error.

35 U.S.C. § 102 Rejections

Controlling case law has frequently addressed rejections under 35 U.S.C. § 102. "For a prior art reference to anticipate in terms of 35 U.S.C. Section 102, **every element** of the claimed invention **must be identically** shown in a single reference." Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 677, 7 U.S.P.Q.2d 1315, 1317 (Fed. Cir. 1988; emphasis added). The disclosed elements must be arranged as in the claim under review. See Lindemann Machinefabrik v. American Hoist & Derrick Co., 730 F.2d 1452, 1458, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984). If any claim, element, or step is absent from the reference that is being relied upon, there is **no** anticipation. Kloster Speedsteel AB v. Crucible, Inc., 793 F.2d 1565, 230 U.S.P.Q. 81 (Fed. Cir. 1986; emphasis added). The following analysis of the present rejections is respectfully offered with guidance from the foregoing controlling case law decisions.

The Examiner has rejected claims 1 to 4, 15, 16, 33 and 34 under 35 U.S.C. 102(e) as being anticipated by Wolfe et al. (US Patent Application Publication 2002/0159409).

The Examiner alleges that Wolfe et al. discloses "A multi-hop wireless backhaul network" based on mesh network 18 illustrated in Figure 1 of Wolfe et al. The Examiner alleges that Wolfe et al. discloses "at least one NAN (network access node)" in the form of radio base stations (RBSs) of a second type, specifically "pico" RBSs, indicated by reference 16 in Figure 1 of Wolfe et al., "a plurality of BNs (base nodes)" in the form of mobile terminals indicated by reference 22 in Figure 1, and "a plurality of AGNs (aggregation nodes)" in the form of mesh attachment points (MAPs) indicated by reference 20 in Figure 1. The Examiner further alleges that Wolfe et al. discloses each of the plurality of AGNs "performing a switching function in relaying traffic between at least one of the base nodes and at least one of the network access nodes" in paragraphs [0007] and [0030] of Wolfe et al. and the limitation "wherein a hierarchical topology of active wireless connections is established with the at least one network access node at the top of the topology, and the base nodes at the bottom of the topology" in paragraph [0014] and Figure 1 of Wolfe et al.

Firstly, Applicant disagrees with the Examiner's characterization that Wolfe et al. discloses a "multi-hop wireless backhaul network". A backhaul network is described in the

present application on page 1 as serving “to efficiently transport large amounts of data across and between communication systems. The data carried in a backhaul network typically originates from (or is destined to) multiple sources in one geographic area and is destined for (or originates from) multiple other sources located in other geographic areas. As such, a backhaul network must provide aggregation points for data in each geographic area and efficiently transport aggregations of data between different geographic areas”. The mesh network 18 in Wolfe et al. is formed using radio base stations (RBSs) of a second type, specifically “pico” RBSs, indicated by reference 16. In paragraph [0016] “pico” RBSs are described as for “coverage of a relatively small size cell. As an example, each pico RBS may have an effective coverage radius of a half a kilometer or less”. Applicant submits that the claimed “multi-hop wireless backhaul network” is not the same as the pico RBS mesh network disclosed by Wolfe et al.

Furthermore, on page 17 of the present application, the description recites “Conventional multi-hop wireless networks have typically been created for low-capacity, delay tolerant, short-haul data transport to/from consumer electronics and Local Area Network (LAN) and Wide Area Network (WAN) operations... conventional multi-hop wireless networks are based on data packet routing. Consequently, each node in a multi-hop wireless network is effectively a router that parses each data packet it receives to determine the data packet’s ultimate destination and then re-transmits the data packet as required. The routing functionality requirement alone makes each node relatively complex. Each node in a data packet’s path delays the arrival time of the data packet to its ultimate destination, since each node parses the data packet before it is re-transmitted. Such delays are tolerated because the data carried on conventional multi-hop wireless networks is expected to be delay tolerant. When considering the applicability to backhaul network design, such delays are not acceptable since circuit traffic is sensitive to timing” (emphasis added). Paragraph [0017] of Wolfe et al. discloses “The mesh 18 functions as an IP-based routing network, with each RBS 16 serving as both an access point for mobile terminals 22 operating within its coverage area and as a router within the mesh 18”. The mesh network disclosed by Wolfe et al. is the type of network described in the present application leading to delays that are unacceptable.

For at least the reasons described above, Applicant submits that mesh network 18 of Wolfe is not equivalent to the “multi-hop wireless backhaul network” recited in claim 1.

Secondly, Applicant disagrees with the Examiner’s equating of the NANs, BNs and AGNs recited in claim 1, with the elements in Figure 1 of Wolfe et al. Based on the equating of elements that the Examiner has alleged, the limitation of each of the plurality of AGNs “performing a switching function in relaying traffic between at least one of the base nodes and at least one of the network access nodes” and the limitation “wherein a hierarchical topology of active wireless connections is established with the at least one network access node at the top of the topology, and the base nodes at the bottom of the topology” can no be met by Wolfe et al., as will be detailed below.

As claim 1 recites each of the plurality of AGNs “performing a switching function in relaying traffic between at least one of the base nodes and at least one of the network access nodes”, and the Examiner equates AGN of claim 1 to MAP 20 of Wolfe et al., BN of claim 1 to mobile station 22 of Wolfe et al. and NAN of claim 1 to RBS 16 of Wolfe et al., it would be necessary for the MAP 20 to perform a switching function in relaying traffic between the mobile station 22 and the RBS 16. This is not described in Wolfe et al. Conversely, Wolfe et al. discloses that the RBS 16 relays traffic from the mobile station 22 to MAP 20 in paragraphs [0020]-[0023].

In addition, for similar reasons discussed above based on the manner in which information is relayed between mobile station 22 to MAP 20 via RBS 16, Wolfe et al. does not disclose “wherein a hierarchical topology of active wireless connections is established with the at least one network access node at the top of the topology, and the base nodes at the bottom of the topology” as this would require Wolfe et al., if Wolfe et al. were in fact equivalent to the subject matter recited in claim 1, to disclose that RBS 16 is at the top of the hierarchical topology and mobile station 22 is at the bottom of the hierarchical topology. If Wolfe et al. disclosed any type of hierarchical topology it would be MAP 20 at the top and mobile station 22 at the bottom of the hierarchical topology.

For at least the above discussed reasons, Applicant submits that the Examiner has erred in equating the limitations recited in claim 1 with the elements disclosed in Wolfe et al.

As Wolfe et al. does not identically disclose all of the limitations of claim 1 for at least the reasons discussed above, Applicant submits that Wolfe et al. cannot anticipate claim 1 and therefore claim 1 is novel over Wolfe et al. Applicant respectfully requests that the Examiner reconsider and withdraw the 35 U.S.C 102 rejection.

Claims 2 to 4, 15, 16, 33 and 34 are dependent upon claim 1, either directly or indirectly, and for at least their dependence on claim 1, these claims should be allowable.

35 U.S.C. § 103 Rejections

In rejecting claims under 35 U.S.C. 103(a), the examiner bears the initial burden of establishing a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). *See also In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984). It is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d, 1071, 1073 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966), viz., (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art. Additionally, in making a rejection under 35 U.S.C. 103(a) on the basis of obviousness, the Examiner must provide some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR Int'l. Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the appellant. *See Oetiker*, 977 F.2d at 1445. *See also Piasecki*, 745 F.2d at 1472. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See Oetiker*, 977 F.2d at 1445; *Piasecki*, 745 F.2d at 1472.

The Examiner has rejected claims 5 to 8, 12 and 13 under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. in view of Naudus (U.S. Patent No. 6,412,006).

The Examiner has rejected claims 9 to 11 under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. in view of Johansson et al. (U.S. Patent No. 7,058,050).

The Examiner has rejected claim 14 under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. in view of Naudus and further in view of Melpignano (U.S. Patent Publication No. 2005/0190700).

The Examiner has rejected claims 17 to 20, 35 and 41 to 44 under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. in view of Smith (U.S. Patent Publication No. 2004/0179555).

The Examiner has rejected claims 21 to 27 under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. in view of Ohara (U.S. Patent No. 5,495,472).

The Examiner has rejected claims 28 to 32 under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. in view of Ohara and further in view of Johansson et al.

The Examiner has rejected claims 36 to 40 under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. in view of Smith and further in view of Ohara.

The Examiner has rejected claims 45 and 46 under 35 U.S.C. 103(a) as being unpatentable over Wolfe et al. in view of Naudus and further in view of Smith.

Applicant submits that the Examiner has not properly determined the differences between the claimed invention and the prior art. Furthermore, the Examiner has not provided a valid explanation to support an obviousness rejection under 35 U.S.C. 103. Applicant's reasoning is detailed below.

Differences between the claimed invention and the prior art

The following is a discussion of how the cited references do not disclose all the elements of the rejected claim. While it may be considered that "the mere existence of differences between prior art and an invention does not establish the invention's non-obviousness", Office personnel must explain why the difference(s) between the prior art and the claimed invention

would have been obvious to one skilled in the art (Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*, published in Federal Register Vol. 72, No. 195 October 10, 2007). As such, if elements from a claim are not disclosed by the combination of cited references and no valid reasoning is provided why the missing elements would be obvious, this may provide a strong basis for why a claim should not be rejected based on obviousness.

Applicant submits that all of the claims are dependent on claim 1, either directly or indirectly, and are rejected at least in part based on Wolfe et al. due to their dependence on claim 1 and the Examiner's allegation that Wolfe et al. anticipates claim 1. For at least the reasons discussed above, Applicant submits that Wolfe et al. does not identically disclose all the elements of claim 1. Applicant does not concede that the other cited references disclose the limitations missing from Wolfe et al. Therefore, as the Examiner has not provided evidence that Wolfe et al. and the various other cited references disclose the subject matter of claim 1 and/or that elements missing from any of the combinations would be obvious and why they would be obvious, there is a clear lack of at least one limitation in the combination of Wolfe et al. and the cited limitations when compared to the recited claims.

Explanation to support an obviousness rejection

As noted above, for the Patent Office to properly combine references in support of an obviousness rejection, the Patent Office must identify a reason why a person of ordinary skill in the art would have sought to combine the respective teachings of the applied references. However, for reasons detailed below, the Examiner's articulated reason can not be regarded as being valid.

The Examiner has at least in part based his reasoning for combining the references on the characterization of Wolfe et al., which Applicant submits for the reasons discussed above are incorrect.

Furthermore, as discussed above, Wolfe et al. is directed to a mesh network functioning as an IP-based routing network, with each RBS 16 serving as both an access point for mobile terminals 22 operating within its coverage area and as a router within the mesh 18. Such a

network is inconsistent with a backhaul network claimed in the present application, for which delays are not acceptable in circuit traffic sensitive to timing. Therefore, Applicant submits that the subject matter of Wolfe et al. teaches away from the claimed invention.

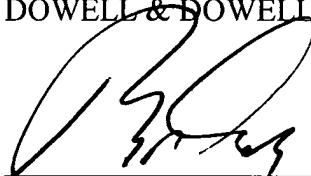
As Wolfe et al. does not disclose the limitation alleged to be disclosed by the Examiner and teaches away from the present application, Applicant submits that the Examiner has failed to provide a suitable reason for combining Wolfe et al. with the other cited references.

Applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness for at least the above-discussed reasons. Therefore, claims 5 to 14, 17 to 32 and 35 to 46 of the present application are patentable over Wolfe et al. in combination with the cited references. Applicant respectfully requests that the Examiner reconsider and withdraw the obviousness rejection of claims 5 to 14, 17 to 32 and 35 to 46.

In view of the foregoing, early favourable consideration of this application is earnestly solicited.

Respectfully submitted,

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